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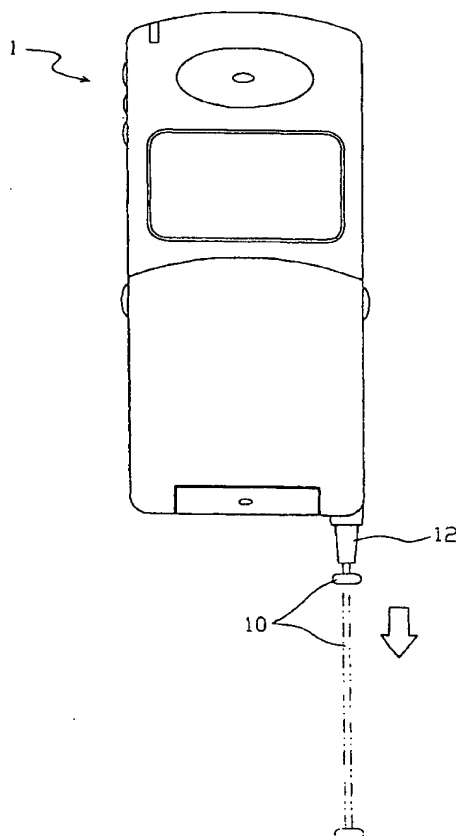
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[Continued on next page]

(54) Title: PORTABLE TELEPHONE HAVING ANTENNA MOUNTED AT BASE OF HANDSET



(57) Abstract: A portable having a retractable antenna for reducing the damage of electromagnetic wave, including: an antenna for being retractable from a bottom surface of the portable.

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## PORTABLE TELEPHONE HAVING ANTENNA MOUNTED AT BASE OF HANDSET

BACKGROUND OF THE INVENTION1. Field of the Invention

The present invention relates to a portable (portable phone), and more particularly, to a portable having an antenna structure for reducing the damage of electromagnetic wave, thereby preventing the effect fatal to the brain of an user while radiating harmful electromagnetic wave.

2. Description of the Related Art

A portable is called as a terminal for performing personal portable communication, that is, the personal portable communication using the system such as cellular, CDMA, and PCS and conventionally, according to its miniaturization, an antenna of taking an important view of the portability is used to thus be capable of drawing from the terminal and retracting into the terminal. Also, since the above antenna adapts retractable type having portable and retractable feature, a whip antenna of top loading type is mainly used to ensure the reception during retraction. However, the antenna as stated above occurs the problem of directly absorbing the harmful electromagnetic wave r

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adiated from the antenna at the brain and the hair of the body because the antenna is adjacent to the ear of the body in the communication. The electromagnetic wave is generated from the terminal of the portable phone and radiated through the antenna to the exterior. Further, it has been widely known that the electromagnetic wave has effect fetal to the people, especially, to the brain of the body. It has been well-known that, in reality, the electromagnetic wave as stated hereinbefore is mainly radiated from an upper end of the antenna, or, at top loading portion and, while the above antenna is adjacent to the brain of the user in the communication and exposed to the electromagnetic wave, the damage to the human body is serious. In particular, in the case of the woman, while the antenna is contacted to the hairs of the user, the electromagnetic wave is directly transmitted through the hairs to the brain, thereby generating more serious damage.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of this invention, many of the attendant advantages thereof, will be readily apparent as the same becomes better understood by reference to the following detailed description when considered in conjunction with the accompanying drawings, in which like reference symbols indicate the same or similar elements components, wherein,

FIG. 1 is a front view showing a portable phone according to an embodiment of the present invention; and,

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constructions unnecessarily obscuring the subject matter of the present invention has been omitted in the following description for clarity.

FIG. 1 is a front view showing a portable phone according to an embodiment of the present invention. In accordance with FIG. 1, the antenna is stuck to the bottom surface of the portable, and draws out to its low position or is retracted into the interior of the portable.

Also, FIG. 2 is a side view showing a portable phone according to an embodiment of the present invention, in the case that a charging battery is separated from the portable. In FIG. 2, the antenna is assembled at the portable by a connection jack 12.

More concretely describing, the charging battery 2 stuck to the rear surface of the portable 1 is able to be drawn out or retracted into the upper end of the portable 1 and the connection jack 12 is installed at one side of the bottom surface of the portable 1. The antenna 10 engaged to the connection jack 12 is drawn out to its lower position, and upon retracting into the portable, is placed to an edge of the charging battery 2.

According to the present invention as constructed previously, the antenna is positioned to be farthest from the brain in the state of drawing out the antenna 10, so that the antenna can not be

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constructions unnecessarily obscuring the subject matter of the present invention has been omitted in the following description for clarity.

FIG. 1 is a front view showing a portable phone according to an embodiment of the present invention. In accordance with FIG. 1, the antenna is stuck to the bottom surface of the portable, and draws out to its low position or is retracted into the interior of the portable.

Also, FIG. 2 is a side view showing a portable phone according to an embodiment of the present invention, in the case that a charging battery is separated from the portable. In FIG. 2, the antenna is assembled at the portable by a connection jack 12.

More concretely describing, the charging battery 2 stuck to the rear surface of the portable 1 is able to be drawn out or retracted into the upper end of the portable 1 and the connection jack 12 is installed at one side of the bottom surface of the portable 1. The antenna 10 engaged to the connection jack 12 is drawn out to its lower position, and upon retracting into the portable, is placed to an edge of the charging battery 2.

According to the present invention as constructed previously, the antenna is positioned to be farthest from the brain in the state of drawing out the antenna 10, so that the antenna can not be

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contacted to the hairs.

As may be apparent from the foregoing, the present invention can remarkably reduce the effect fetal to the brain of the people due to the harmful electromagnetic wave by placing the antenna far from the brain as well as by not contacting the antenna to the hairs in the communication according as the antenna of radiating the electromagnetic wave is placed to its lower position of the portable. Further, while positioning the antenna to the lower position of the portable, the present invention has the effect to easily be retract the antenna by the other hand which does not grip the portable in spite of the communication.

While there have been illustrated and described what are considered to be preferred embodiments of the present invention, it will be understood by those skilled in the art that various changes and modifications may be made, and equivalents may be substituted for elements thereof without departing from the true scope of the present invention. In addition, many modifications may be made to adapt a particular situation to the teaching of the present invention without departing from the central scope thereof. Therefore, it is intended that the present invention not be limited to the particular embodiments disclosed as the best mode contemplated for carrying out the present invention, but that the present invention includes all embodiments falling within the scope of the appended claims.

WHAT IS CLAIMED IS:

1. A portable having a retractable antenna for reducing the damage of electromagnetic wave, comprising:  
said antenna for being retractable from a bottom surface of said portable.



FIG 1

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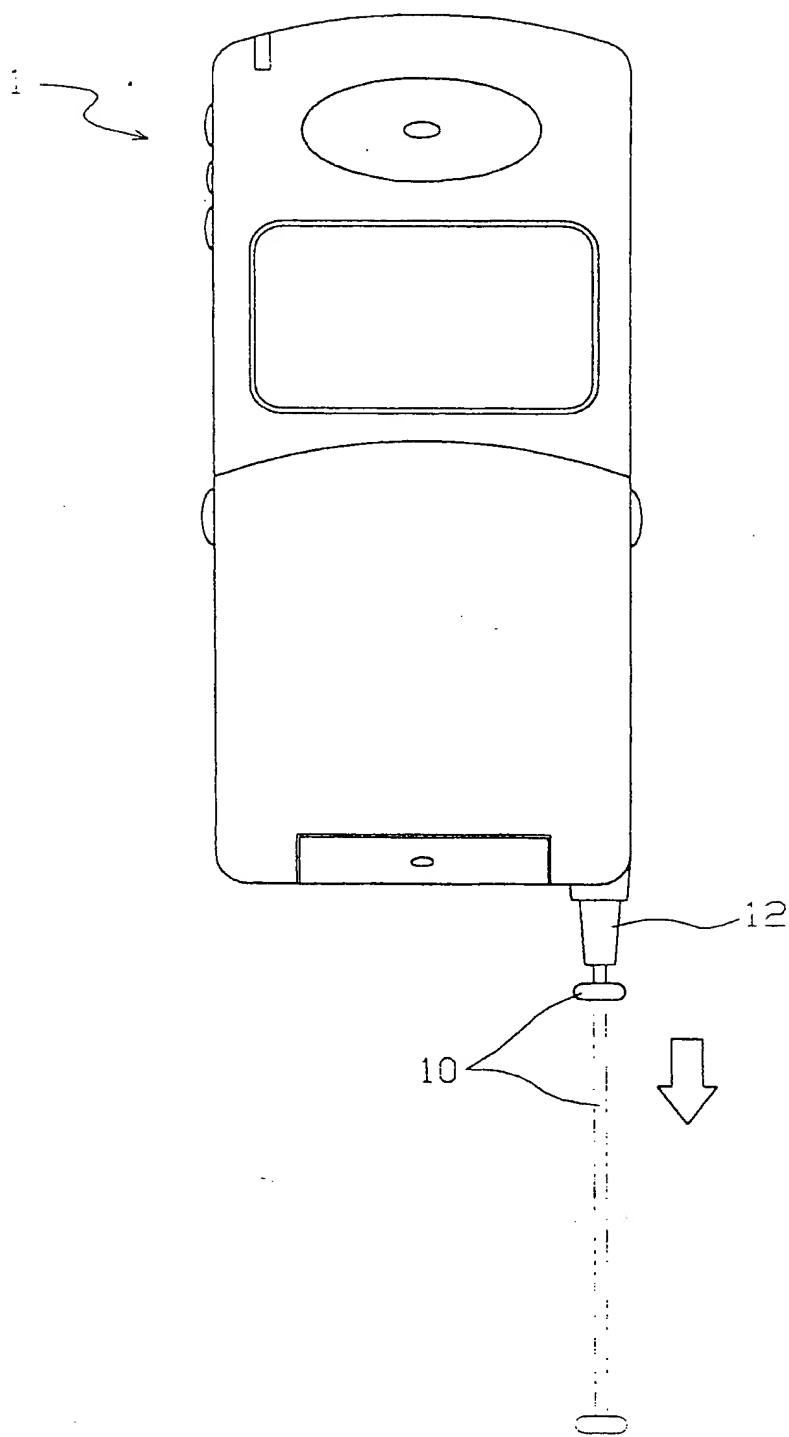
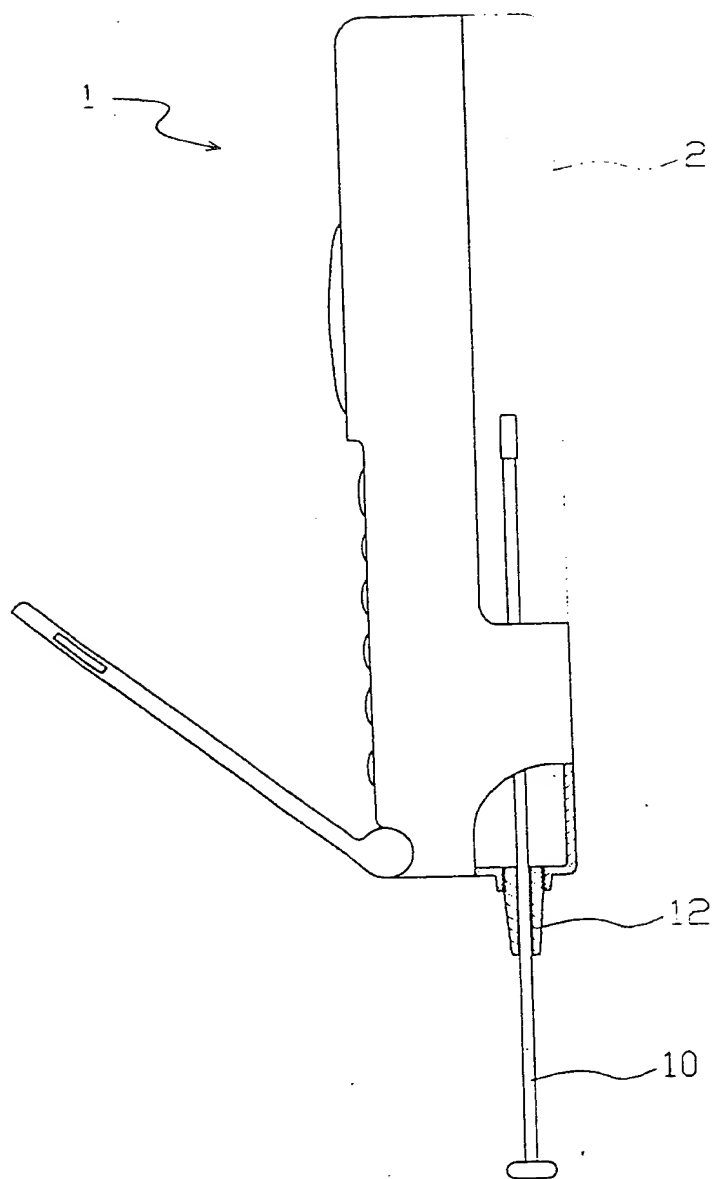


Fig. 2

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/KR 00/00190

## CLASSIFICATION OF SUBJECT MATTER

IPC<sup>7</sup>: H 04 Q 7/32; H 04 B 1/38; H 01 Q 1/24

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup>: H 04 B; H 04 M; H 04 Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0588365 A1 (ALCATEL ITALIA S.P.A.) 23 March 1994 (23.03.94) abstract; fig.3,4,8; column 2, line 41 - column 3, line 53; claims 1,2,6.	1
X	WO 99/44346 A1 (O'BADIA) 2 September 1999 (02.09.99) abstract; fig.1,2,5; claims 1-4,10.	1
X	WO 99/38305 A1 (ZHANG) 29 July 1999 (29.07.99) abstract; fig.1,2.	1

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:

„A“ document defining the general state of the art which is not considered to be of particular relevance

„E“ earlier application or patent but published on or after the international filing date

„L“ document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

„O“ document referring to an oral disclosure, use, exhibition or other means

„P“ document published prior to the international filing date but later than the priority date claimed

„T“ later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

„X“ document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

„Y“ document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

„&“ document member of the same patent family

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report			Publication date	Patent family member(s)			Publication date
EP	A1	568365	23-03-1994	IT	A0	922147	18-09-1992
				IT	A	1255603	09-11-1995
WO	A1	9938305	29-07-1999	AU	A1	21476/99	09-08-1999
				CN	U	2315741	21-04-1999
WO	A1	9944346	02-09-1999	AU	A1	25432/99	15-09-1999
				IL	A0	123432	21-09-1998